

ABSTRACT OF THE DISCLOSURE

A method of analyzing a substance comprises ionizing the substance to form a string of ions. The ions are then subject to a first mass analysis step. In one embodiment, the ions are accelerated into a collision cell in known manner to form primary fragment ions. These primary fragment ions are then accelerated into a downstream mass analyzer, to promote secondary fragmentation. In another embodiment of the invention, ions are passed through the collision cell, without fragmentation, and then accelerated from the collision cell into a low pressure section, which may be a mass analyzer or a rod set for collecting and collimating ions. This is done under conditions that promote fragmentation. The operating conditions of the low pressure section can be such as to promote collection or retention of ions depending upon their mass, and more specifically to reject low mass ions. This enables primary fragment ions to be cooled, and secondary fragment ions to be formed subsequently from these ions after they have dissipated some of their energy. This enables control of secondary fragmentation processes, and offers numerous opportunities for analyzing complex ions.

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